

Jet substructure measurements with small and large radius jets with ATLAS

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Measurements of jet substructure in heavy-ion collisions provide critical insights into the mechanisms of jet quenching within the hot and dense QCD medium created during these collisions, spanning a wide range of energy scales. This talk presents new measurements from the ATLAS Collaboration on jet suppression and substructure, employing the Soft-Drop grooming procedure in Pb+Pb and pp collisions at $\sqrt{s_{NN}} = 5.02$ TeV. These precision measurements utilize various jet constituents, including charged particles and novel objects reconstructed from tracker and calorimeter data. Notably, measurements that exclusively utilize charged particles extend to a large radius of $R = 1.0$. Jet suppression is quantified with the nuclear modification factor RAA and is presented as a function of jet transverse momentum p_T , the opening angle of the hardest internal splitting θ_g , and the corresponding transverse momentum scale $\sqrt{d_{12}}$. These results, when compared with theoretical models, enhance our understanding of jet quenching dynamics in the QCD medium, provide new insights into the medium's properties, and test the theoretical understanding of QCD dynamics in heavy-ion collisions.

Category

Experiment

Collaboration

ATLAS

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